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10/561,872	05/30/2006	Moritaka Kimura	1215.004	1441

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EXAMINER	
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ART UNIT	PAPER NUMBER
2457	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/561,872	KIMURA ET AL.	
	Examiner	Art Unit	
	Clayton R. Williams	2457	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09/29/08*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-15 are pending in this application per amendment.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-8 and 10-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Mikio, JP 2000-020501 (hereinafter Mikio).

For claim 1, Mikio discloses in the network system that n (n is any real number of 2) number of computers PCi, (integer i represents the number of PCi from 0 to n-1) are connected to a line concentrator or communications network that has a switching function, the data distribution method is characterized in that
each computer PCi has a storage device that is responsible for storing data Xi (i is an integer from 0 to n-1) that is to be cross correlated, the data Xi noted above on each PCi can be divided into n partial data Xi(j) (j is an integer from 0 to n-1) ([0022], disclosure of nodes of parallel computing system with storage apparatus for holding portions of a data set), computer PCk (k is an integer from 0 to n-1) is responsible for the cross correlation processing of partial data Xi(k) located on each computer PCi and

further, in each pair including 2 computers which are connected to be able transmit data via the line concentrator or communications network noted above, mutually between 2 computers which are connected, the computer repeats steps that computers transmit their allocated partial data to the partner computer which is connected to said computer between each other ([0059], disclosure of nodes of parallel system operating in pairs to exchange data for processing).

For claim 2, Mikio discloses the data distribution method according to claim 1 wherein said step is repeated n-1 times if n is even and n times when if n is odd, and each cycle of the step is repeated only between said pair of computers and a same pair of computers is allocated without overlapping through all of the steps ([0059]).

For claim 3, Mikio discloses in the network system that n (n is any real number of 2) number of computers PCi, (integer i represents the number of PCi from 0 to n-1) are connected to a line concentrator or communications network capable of full duplex transmission with switching function, the data distribution method is characterized in that each computer PCi has a storage device that is responsible for storing data Xi (i is an integer from 0 to n-1) that is to be cross correlated, the data Xi noted above on each PCi can be divided into n partial data Xi(j) (j is an integer from 0 to n-1), computer PCk (k is an integer from 0 to n-1) is responsible for the cross correlation processing of partial data Xi(k) located on each computer PCi, and further, in computers which are connected to be able transmit data via the line concentrator or communications

network noted above, in repeating the step that computers transmit their allocated partial data between the computer which sends data and the computer which receives data, during each step, same computer for sending and same computer for receiving are allocated without overlapping and same computers are allocated without overlapping through all of the steps, and these steps are repeated n-1 times, regardless of whether n being even or odd ([0022] and [0059]).

For claim 4, Mikio discloses in the network system that n (n is any real number of 2) number of computers PCi, (integer i represents the number of PCi from 0 to n-1) are connected to a line concentrator or communications network that has a switching function, the data distribution method is characterized in that each computer PCi has a storage device that is responsible for storing data Xi (i is an integer from 0 to n-1) that is to be cross correlated, the data Xi noted above on each PCi can be divided into n partial data Xi(m) (m is an integer from 0 to n-1) having a size of unit data and can be divided into the block of every consecutive n of the partial data without overlapping, computer PCk (k is an integer from 0 to n-1) is responsible for the cross correlation processing of partial data Xi(k) located on each computer PCi, and further, in each pair including 2 computers which are connected to be able transmit data via the line concentrator or communications network noted above, mutually between 2 computers which are connected, the computer repeats steps that computers transmit their allocated partial data to the partner computer which is connected to said computer between each other ([0022] and [0059]).

For claim 5, Mikio discloses the data distribution method according to claim 4 wherein the block of the turn (where . is an integer of 0 and more) includes partial data from n times to (n.times..+n-1) and the computer PCk of the k turn is responsible for the cross correlation processing of partial data Xi(k+n.times) located on each computer PCi ([0033], disclosure of turns feature).

For claim 6, Mikio discloses the data distribution method according to claim 4 or 5 wherein said steps are applied to every block n-1 times if n is an even number, and n times if n is an odd number and each cycle of the step are repeated between the said pairs of computers assigned without overlapping, and all of the steps are repeated between said pairs assigned without overlapping ([0022] and [0059]).

For claim 7, Mikio discloses in the network system that n (n is any real number of 2) number of computers PCi, (integer i represents the number of PCi from 0 to n-1) are connected to a line concentrator or communications network capable of full duplex transmission with switching function, the data distribution method is characterized in that each computer PCi has a storage device that is responsible for storing data Xi (i is an integer from 0 to n-1) that is to be cross correlated, the data Xi noted above on each PCi can be divided into n partial data Xi(m) (m is an integer from 0 to n-1) having a size of unit data and can be divided into the block of every consecutive n of the partial data without overlapping, computer PCk (k is an integer from 0 to n-1) is responsible for the

cross correlation processing of partial data Xi(k) located on each computer PCi, and further, in computers which are connected to be able transmit data via the line concentrator or communications network noted above, in repeating the step that computers transmit their allocated partial data between the computer which sends data and the computer which receives data, during each step, same computer for sending and same computer for receiving are allocated without overlapping and same computers are allocated without overlapping through all of the steps, and these steps are repeated n-1 times, regardless of whether n being even or odd ([0022] and [0059]).

For claim 8, Mikio discloses the data distribution method according to one of claims 1 to 7 that computers used in this method are general purpose computers ([0023], disclosure of parallel system comprised of multiple processing entities).

For claim 10, Mikio discloses the data distribution method according to one of claims 1 to 9 that data used in this method are time series data recorded from radio telescopes ([0001], parallel computing by its very nature is concerned with handling complex problems involving enormous amounts of data).

For claim 11, Mikio discloses in the network system that n (n is any real number of 2) number of computers PCi, (integer i represents the number of PCi from 0 to n-1) are connected to a line concentrator or communications network that has a switching function, the data distribution method is characterized in that each computer PCi has a

storage device that is responsible for storing data Xi (i is an integer from 0 to n-1) that is to be cross correlated, the data Xi noted above on each PCi can be divided into n partial data Xi(j) (j is an integer from 0 to n-1), computer PCk (k is an integer from 0 to n-1) is responsible for the cross correlation processing of partial data Xi(k) located on each computer PCi and further, in each pair including 2 computers which are connected to be able to transmit data via the line concentrator or communications network noted above, mutually between 2 computers which are connected, includes data transmission means which repeats steps that computers transmit their allocated partial data to the partner computer which is connected to said computer between each other ([0022] and [0059]).

For claim 12, Mikio discloses in the network system that n (n is any real number of 2) number of computers PCi, (integer i represents the number of PCi from 0 to n-1) are connected to a line concentrator or communications network that has a switching function, the data distribution method is characterized in that each computer PCi has a storage device that is responsible for storing data Xi (i is an integer from 0 to n-1) that is to be cross correlated, the data Xi noted above on each PCi can be divided into n partial data Xi(m) (m is an integer from 0 to n-1) having a size of unit data and can be divided into the block of every consecutive n of the partial data without overlapping, computer PCk (k is an integer from 0 to n-1) is responsible for the cross correlation processing of partial data Xi(k) located on each computer PCi, and further, in each pair including 2 computers which are connected to be able transmit data via the line

concentrator or communications network noted above, mutually between 2 computers which are connected, includes data transmission means which repeats steps that computers transmit their allocated partial data to the partner computer which is connected to said computer between each other ([0022] and [0059]).

For claim 13, Mikio discloses in the network system that n (n is any real number of 2) number of computers PCi, (integer i represents the number of PCi from 0 to n-1) are connected to a line concentrator or communications network capable of full duplex transmission with switching function, the data distribution method is characterized in that each computer PCi has a storage device that is responsible for storing data Xi (i is an integer from 0 to n-1) that is to be cross correlated, the data Xi noted above on each PCi can be divided into n partial data Xi(j) (j is an integer from 0 to n-1), computer PCk (k is an integer from 0 to n-1) is responsible for the cross correlation processing of partial data Xi(k) located on each computer PCi, and further, in computers which are connected to be able transmit data via the line concentrator or communications network noted above, in repeating the step that computers transmit their allocated partial data between the computer which sends data and the computer which receives data, during each step, same computer for sending and same computer for receiving are allocated without overlapping and same computers are allocated without overlapping through all of the steps, and includes data transmission means in which these steps are repeated n-1 times, regardless of whether n being even or odd ([0022] and [0059]).

For claim 14, Mikio discloses In the network system that n (n is any real number of 2) number of computers PCi, (integer i represents the number of PCi from 0 to n-1) are connected to a line concentrator or communications network capable of full duplex transmission with switching function, the data distribution method is characterized in that each computer PCi has a storage device that is responsible for storing data Xi (i is an integer from 0 to n-1) that is to be cross correlated, the data Xi noted above on each PCi can be divided into n partial data Xi(m) (m is an integer from 0 to n-1) having a size of unit data and can be divided into the block of every consecutive n of the partial data without overlapping, computer PCk (k is an integer from 0 to n-1) is responsible for the cross correlation processing of partial data Xi(k) located on each computer PCi, and further, in computers which are connected to be able transmit data via the line concentrator or communications network noted above, in repeating the step that computers transmit their allocated partial data between the computer which sends data and the computer which receives data, during each step, same computer for sending and same computer for receiving are allocated without overlapping and same computers are allocated without overlapping through all of the steps, and data transmission means in which these steps are repeated n-1 times, regardless of whether n being even or odd ([0022] and [0059]).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 9 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mikio, in view of Official Notice.

For claim 9, Mikio fails to explicitly disclose that the network medium allows for full duplex communications.

However, Examiner takes Official Notice that full duplex network communication among computing entities was commonplace well prior to the time of the claimed invention and, as such, was an obvious feature for the parallel computing system disclosed in Mikio.

It would have been obvious to one skilled in the art at the time of the invention to modify the teachings of Mikio to incorporate full duplex communication, because this modification would allow the computing entities of Mikio to simultaneously transmit and receive information across a network. As such, this modification allows for increased network throughput and efficiency.

For claim 15, the combination of Mikio and Official Notice discloses the data distribution method according to one of claims 11 to 14 that the network medium allows for full duplex communications (Official Notice).

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive.

Applicant argues that Mikio requires 2^n processing units. The examiner contends that even if Applicant's interpretation of Mikio is correct, 2^n processing units does comport with the scope of the independent claims. The first limitation of the independent claims describes a plurality of n computers, n being a real number which is equal to or greater than 2. As such, 2^n, where n is an integer greater than 1 does meet this criteria.

Applicant argues that Mikio leaves some processing units idle during the data exchange steps. The examiner contends that even if Applicant's interpretation of Mikio is correct, the rejection remains proper. The claims do no describe a system wherein every computer PCi must exchange data with a partner computer during every iteration/cycle of the distributed computing process.

Applicant argues that Mikio does not teach subdivision of data. The rejection stands as [0059] of Mikio teaches a system wherein nodes of a parallel system exchange data for processing.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clayton R. Williams whose telephone number is 571-270-3801. The examiner can normally be reached on M-F (8 a.m. - 5 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on 571-272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Clayton R. Williams
Patent Examiner
Art Unit 2457

Dec. 10, 2008
CRW

/ARIO ETIENNE/

Supervisory Patent Examiner, Art Unit 2457